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In re the Application of: INOUE, Masaru, et al.

JUN 7 10 29

Serial No.: 10/646,818

US PATENT & TRADEMARK OFFICE

ATTN: Refund Section
Accounting Division
Office of Finance

Filed: August 25, 2003

Group Art Unit: 1725

For: **THIN PLATE FORMATION METHOD, THIN PLATE AND SUSPENSION
CORRECTION APPARATUS, AND CORRECTION METHOD**

Examiner: Samuel M. Heinrich

REQUEST FOR REFUND

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: June 6, 2006

Sir:

The undersigned respectfully requests the refund of \$120.00 to the Deposit Account 01-2340 on April 12, 2006 (Control No. 4) for overpayment for an extension of time for the Supplemental Response under 37 CFR §1.116 dated April 7, 2006. Accordingly, a Response under 37 CFR §1.116 was timely filed on March 27, 2006 as evidenced by the enclosed copy of the Office Action dated December 27, 2005, a copy of the Response, a copy of the Supplemental Response, a copy of the first page of the Office Action, a copy of the monthly statement and the date-stamped postcard receipts. It is respectfully requested that the \$120.00 overpayment be credited to Deposit Account No.01-2340.

Respectfully submitted,
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP

Darren R. Crew
Attorney for Applicant
Reg. No. 37,806

DRC/llf
Atty. Docket No. 031058
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

Enclosures: Copies of the Response, Supplemental Response
Monthly Statement dated April 28, 2006 and date-stamped postcards.



THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: INOUE, Masaru et al.

Serial No.: 10/646,818

Group Art Unit: 1725

Filed: August 25, 2003

Examiner: Samuel M. Heinrich

P.T.O. Confirmation No.: 1815

FOR: THIN PLATE FORMATION METHOD, THIN PLATE AND SUSPENSION
CORRECTION APPARATUS, AND CORRECTION METHOD

RESPONSE UNDER 37 CFR §1.116
- EXPEDITED RESPONSE -
GROUP ART UNIT 1725

MAILSTOP AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

March 27, 2006

Sir:

In response to the Office Action dated December 27, 2005, entry of the following remarks,
further examination, and reconsideration are respectfully requested.

Claims Currently Pending are reflected in the listing of claims which begins on page 2 of
this paper.

Remarks/Arguments begin on page 7 of this paper.

CLAIMS CURRENTLY PENDING:

Listing of Claims:

1 Claim 1 (previously presented): A method of bending a thin plate in a predetermined
2 direction of a curve deformation by irradiating a laser beam onto the thin plate, comprising:
3 irradiating a laser beam linearly onto the thin plate in approximately the predetermined
4 direction, wherein the laser beam is a combined shape of characters.

1 Claim 2 (previously presented): A method of bending a thin plate using a laser beam,
2 wherein the laser beam is irradiated onto the thin plate to curve the thin plate to a
3 predetermined curvature, wherein the laser beam is a combined shape of characters.

1 Claim 3 (original): A method of correcting a suspension used to mount a magnetic head
2 in a hard disk drive, comprising:
3 either one of or both
4 measuring load on the suspension and obtaining a load adjustment amount from the
5 measured load; and
6 measuring an angle of the suspension and obtaining an angle adjustment amount
7 from the measured angle;
8 defining, by using irradiation shapes in advance, that a laser beam is linearly irradiated

9 onto either one of or both a load curve portion and an angle adjustment portion of the suspension
10 in approximately the same direction as a curving direction, preparing combinations of irradiation
11 shapes in advance, and selecting an irradiation shape combination corresponding to either one of
12 or both the load adjustment amount and the angle adjustment amount; and
13 irradiating a laser beam based on the selected irradiation shape combination.

1 Claim 4 (original): A suspension correction method of adjusting an angle of the
2 suspension by irradiating a laser beam onto a laser beam irradiation area for correcting an
3 angle in plus or a laser beam irradiation area for correcting an angle in minus, based on an
4 arrangement that

5 the suspension is formed in a thin plate shape as a whole, the header is connected to an
6 outrigger from one end of a head mounting portion via a spring, and the outrigger consists of a
7 curve portion reaching both sides of the head mounting portion, and a linear portion that
8 continues from the curve portion, and

9 an XY axis is set around the head mounting portion, an area I to an area IV are formed on
10 the XY coordinates with the X axis as a gimbal longitudinal direction, and the laser beam
11 irradiation area for correcting the angle in plus or the laser beam irradiation area for correcting
12 the angle in minus is set in the area I and the area III or the area II and the area IV respectively.

1 Claim 5 (original): A suspension correction method of adjusting an angle of the
2 suspension by irradiating a laser beam onto a laser beam irradiation area for correcting a pitch
3 angle in plus or a laser beam irradiation area for correcting a pitch angle in minus, based on an
4 arrangement that

5 the suspension is formed in a thin plate shape as a whole, the header is connected to an
6 outrigger from one end of a head mounting portion via a spring, and the outrigger consists of a
7 curve portion reaching both sides of the head mounting portion, and a linear portion that
8 continues from the curve portion, and

9 a boundary is provided in a direction orthogonal with a gimbal longitudinal direction
10 around the spring, a first area is formed at the head mounting side, a second area is formed at the
11 opposite side, the laser beam irradiation area for correcting the pitch angle in plus is set in the
12 first area, and the laser beam irradiation area for correcting the pitch angle in minus is set in the
13 second area.

1 Claim 6 (withdrawn): A thin plate that has at least one portion thereof formed in a curve
2 and beam shape, and that has a laser beam irradiation trajectory linearly formed in approximately
3 the same direction as the curve direction.

1 Claim 7 (withdrawn): An apparatus for correcting a suspension used to mount a magnetic
2 head in a hard disk drive, comprising:

3 either one of or both

4 a load measuring unit that measures a load on the suspension; and

5 an angle measuring unit that measures an angle of the suspension;

6 a laser beam irradiating unit that irradiates a laser beam in approximately the same
7 direction as a curving direction onto either one of or both load correction area and an angle
8 correction area of the suspension, based on either one of or both the load measured by the load
9 measuring unit and the angle measured by the angle measuring unit; and

10 a conveyer unit that fixes the suspension onto a conveyer stage, and conveys the
11 suspension while positioning the suspension on either one of or both the load measuring unit and
12 the angle measuring unit, and the laser beam irradiating unit.

1 Claim 8 (withdrawn): The suspension correction apparatus according to claim 7, wherein
2 the laser beam irradiating unit includes a laser marker, and the laser beam irradiating unit
3 has a storage to store a laser beam irradiation shape according to the laser marker as an
4 irradiation shape.

1 Claim 9 (withdrawn): A computer program that makes a computer executes:

2 either one of or both

3 defining, by using irradiation shapes in advance, that a laser beam is linearly
4 irradiated onto any one part of a load curve portion of a suspension in approximately the same
5 direction as a curving direction, and preparing combinations of irradiation shapes in advance; and

6 defining, by using irradiation shapes in advance, that a laser beam is linearly
7 irradiated onto any one part of an angle adjustment portion of a suspension in approximately the
8 same direction as a curving direction, and preparing combinations of irradiation shapes in
9 advance; and

10 a selecting step of selecting an irradiation shape combination corresponding to either one
11 of or both the load adjustment amount and the angle adjustment amount obtained from a
12 measured load of a head of a hard disk drive that presses against a disk in the hard disk drive, and
13 using the selected combination to irradiate the laser beam.

* * * *

U.S. Patent Application Serial No. 10/646,818
Amendment filed March 27, 2006
Reply to OA dated December 27, 2005

REMARKS:

Claims 1-9 are currently pending. Claims 1-5 are currently being considered, none of which have been amended herein. Claims 6-9 have been withdrawn from consideration.

Some of the differences between **Matsushita '604** and the subject application are discussed herein below.

First, in the case of USP 6,640,604 (**Matsushita '604**), a thin metal plate as a work piece is supported by a material support jig 4, as is shown in FIG. 1 of **Matsushita '604**. Then, laser irradiation is performed by scanning the laser beam across the width (not in a longitudinal direction) of the workpiece in order to bend the workpiece in a longitudinal direction as is clear from FIG. 3 of **Matsushita '604**.

On the other hand, according to the subject application, laser irradiation is performed by scanning the laser beam in a longitudinal direction and approximately in parallel with the longitudinal edges of the workpiece in order to bend the workpiece in a longitudinal direction as is depicted in Figs. 10A, 11, and 12.

Second, in case of the subject application, the combined characters are sequentially irradiated. As the transmission pitch is "0", substantially a laser beam of the combined shape of the characters

U.S. Patent Application Serial No. 10/646,818
Amendment filed March 27, 2006
Reply to OA dated December 27, 2005

is irradiated. (See page 22, lines 9-11 of the specification of the subject application). **Matsushita '604** fails to disclose this feature of the subject application.

Scan of the laser marker can be set freely, although the size of the dot differs in accordance with energy, it is possible to cause a thermal deformation in approximately 6 mm. Scan is defined as to irradiate the laser beam by moving the dot using a galvano scanner mirror as is shown in Figs. 11 and 12. Character is defined as a line which is drawn by a continuous scan. (See page 18, line 5 to page 20, line 10 of the specification of the subject application).

Namely, combined shape of two characters are depicted in Fig. 11. The squares drawn by dotted lines indicate an area irradiated by one character, it is possible to continuously irradiate a laser beam in a state of a pitch "0" as is set forth in page 11, line 13 of the specification of the subject application.

Each one of C2 to C11 in Fig. 8 indicates one character, and each one of C12 to C15 indicates combined shape of characters. The squares drawn by dotted lines can be set freely as long as the laser beam reaches. For example, it is possible to set the squares drawn by dotted lines as depicted in Figs. 5 and 6. In the case of Fig. 5, the combined shape of two characters are irradiated. In the case of Fig. 6, not all the characters are irradiated all the time, but desired characters are

U.S. Patent Application Serial No. 10/646,818
Amendment filed March 27, 2006
Reply to OA dated December 27, 2005

selected and combined shape of the desired characters are irradiated in accordance with the desired roll angle and pitch angle.

The Office Action mailed December 27, 2005 was a premature final Office Action, because independent claims 3-5 were rejected under a new ground of rejection (35 USC 112) even though claims 3-5 were not amended after the previous Office Action. Thus, Applicants respectfully request that the finality of the last Office Action be withdrawn.

Claims 1-5 stand rejected under the second paragraph of 35 USC 112 as being indefinite.

Applicants respectfully traverse this rejection, for the following reasons.

The Examiner has argued that an amendment to independent claims 1 and 2 filed on October 24, 2005 regarding "a combined shape of characters" has caused the scope of all independent claims 1-5 to be unclear.

Applicants respectfully submit that the Examiner should withdraw the rejection of claims 3-5 under the second paragraph of 35 USC 112 because: claims 3-5 are independent claims; this 112 rejection was not made in the previous Office Action; claims 3-5 were not amended after the

U.S. Patent Application Serial No. 10/646,818
Amendment filed March 27, 2006
Reply to OA dated December 27, 2005

previous Office Action; and claims 3-5 are definite and are clearly described.

Additionally, in view of the above, it is respectfully submitted that claims 1 and 2 are clearly described and are definite.

Thus, Applicants respectfully submit that the rejection of claims 1-5 under the second paragraph of 35 USC 112 should be withdrawn.

Claims 1-5 stand rejected under 35 USC 103(a) as obvious over USP 6,640,604 (Matsushita '604). Claims 1-5 stand rejected under 35 USC 103(a) as obvious over Alleged Admitted Prior Art in view of Matsushita '604.

Applicants respectfully traverse the above two rejections of claims 1-5 under 35 USC 103(a), for the following reasons.

Matsushita '604 and alleged admitted prior art, alone or in combination, fail to describe, teach, or suggest the following features set forth in claim 1: "wherein the laser beam is a combined shape of characters", in combination with the other claimed features.

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Amendment filed March 27, 2006
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Matsushita '604 and alleged admitted prior art, alone or in combination, fail to describe, teach, or suggest the following features set forth in claim 2: "wherein the laser beam is a combined shape of characters", in combination with the other claimed features.

Matsushita '604 and alleged admitted prior art, alone or in combination, fail to describe, teach, or suggest the following features set forth in claim 3: "selecting an irradiation shape combination corresponding to either one of or both the load adjustment amount and the angle adjustment amount", in combination with the other claimed features.

Matsushita '604 and alleged admitted prior art, alone or in combination, fail to describe, teach, or suggest the following features set forth in claim 4: "an XY axis is set around the head mounting portion, an area I to an area IV are formed on the XY coordinates with the X axis as a gimbal longitudinal direction, and the laser beam irradiation area for correcting the angle in plus or the laser beam irradiation area for correcting the angle in minus is set in the area I and the area III or the area II and the area IV respectively", in combination with the other claimed features.

Matsushita '604 and alleged admitted prior art, alone or in combination, fail to describe, teach, or suggest the following features set forth in claim 5: "a boundary is provided in a direction

U.S. Patent Application Serial No. 10/646,818
Amendment filed March 27, 2006
Reply to OA dated December 27, 2005

orthogonal with a gimbal longitudinal direction around the spring, a first area is formed at the head mounting side, a second area is formed at the opposite side, the laser beam irradiation area for correcting the pitch angle in plus is set in the first area, and the laser beam irradiation area for correcting the pitch angle in minus is set in the second area", in combination with the other claimed features.

Thus, Applicants respectfully submit that the above two rejections of claims 1-5 under 35 USC 103(a) should be withdrawn.

In view of the aforementioned remarks, all claims currently being considered are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. 10/646,818
Amendment filed March 27, 2006
Reply to OA dated December 27, 2005

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due or in the future with respect to this application, to Deposit Account No. 01-2340.

Respectfully submitted,
ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



Darren R. Crew
Attorney for Applicants
Reg. No. 37,806

DRC/llf
Atty. Docket No. 031058
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **INOUE, Masaru et al.**

Group Art Unit: 1725

Serial No.: 10/646,818

Examiner: **Samuel M. Heinrich**

Filed: **August 25, 2003**

P.T.O. Confirmation No.: 1815

**FOR: THIN PLATE FORMATION METHOD, THIN PLATE AND SUSPENSION
CORRECTION APPARATUS, AND CORRECTION METHOD**

SUPPLEMENTAL RESPONSE UNDER 37 CFR §1.116

MAILSTOP AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

April 7, 2006

Sir:

In supplemental response to the Office Action dated **December 27, 2005**, further to the response filed March 27, 2006, entry of the following remarks, further examination, and reconsideration are respectfully requested.

Remarks/Arguments begin on page 2 of this paper.

U.S. Patent Application Serial No. 10/646,818
Amendment filed April 7, 2006
Reply to OA dated December 27, 2005

REMARKS:

Applicants filed a Response on March 27, 2006. That Response inadvertently included a typographical error in the "REMARKS" section, on page 8, at line 4.

In the Response filed on March 27, 2006, on page 8, at line 4, the phrase "approximately 6 mm" should have been --approximately 0.06 mm--.

The corrected sentence in its entirety is as follows: "Scan of the laser marker can be set freely, although the size of the dot differs in accordance with energy, it is possible to cause a thermal deformation in approximately 0.06 mm."

In view of the aforementioned remarks, all claims currently being considered are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. 10/646,818
Amendment filed April 7, 2006
Reply to OA dated December 27, 2005

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due now or in the future with respect to this application, to Deposit Account No. 01-2340.

Respectfully submitted,
ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP

Darren R. Crew

Darren R. Crew
Attorney for Applicants
Reg. No. 37,806

DRC/llf
Atty. Docket No. 031058
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,818	08/25/2003	Masaru Inoue	031058	1815
23850 7590 12/27/2005				
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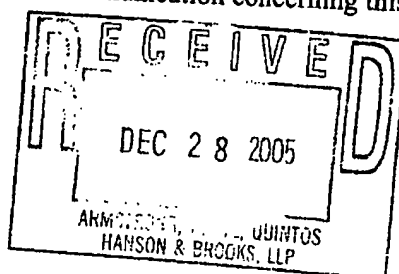
EXAMINER
HEINRICH, SAMUEL M

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 12/27/2005

DUE: MARCH 27, 2006
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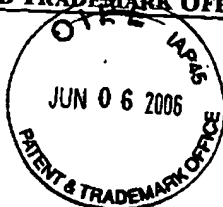


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1725 K STREET, NW
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WASHINGTON DC 20006



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CARD NO: 19366

U.S. Patent Application Docket No: 031058
Serial No: 10/646,818 Filed: 08/25/03
Patent Number: Issued:
Applicant(s): INOUE, Masaru, et al.

Papers filed herewith on: 04/07/06

Other: Supplemental Response Under 37 CFR 1.116



COMMISSIONER OF PATENTS

Receipt is hereby acknowledged of the papers filed as indicated
in connection with the above-identified case.

DRC/LLF



CARD NO: 19166

U.S. Patent Application Docket No: 031058
Serial No: 10/646,818 Filed: 08/25/03
Patent Number: Issued:
Applicant(s): INOUE, Masaru, et al.

Papers filed herewith on: 03/27/06

Other: Amendment 1.116



COMMISSIONER OF PATENTS

Receipt is hereby acknowledged of the papers filed as indicated
in connection with the above-identified case.

DRC/LLF

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Adjustment date: 06/21/2006 SDENB081
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